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Title: "Integrally Reinforced Composite Sandwich Joint and Process . . . "
Inventors: Grosskrueger, et al.
Docket No.: 41992-00527
Russell T. Manning, Esq. (720)562-5502



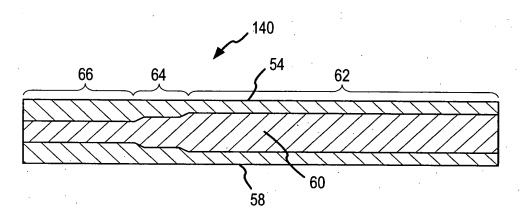


FIG.1

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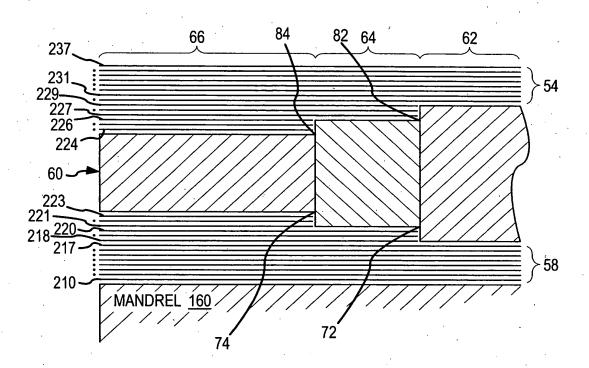
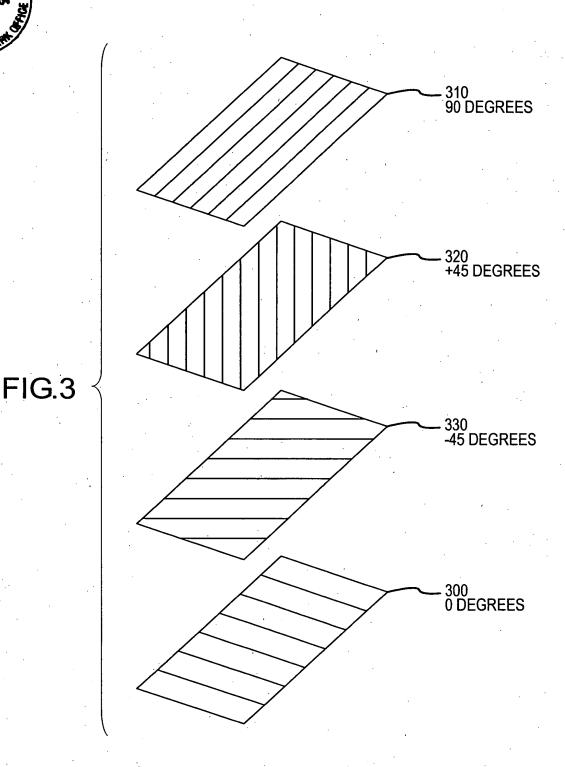


FIG.2

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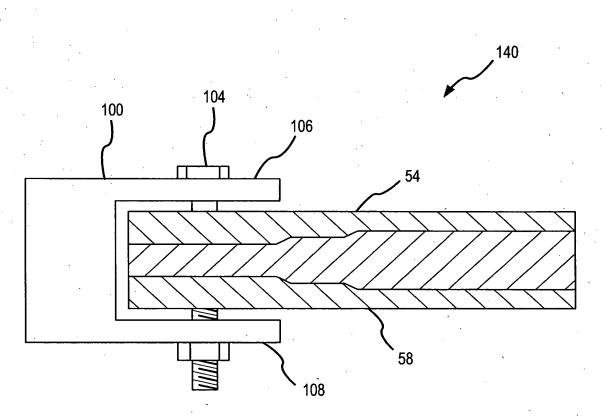


FIG.4

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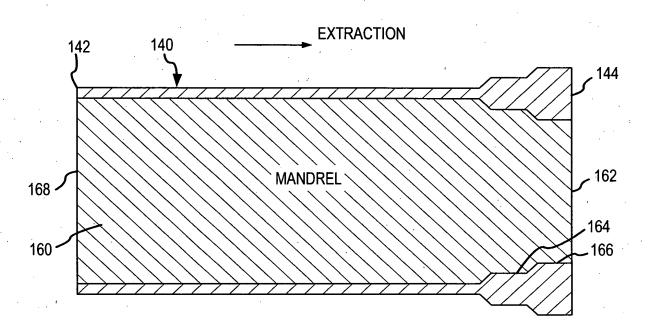


FIG.5

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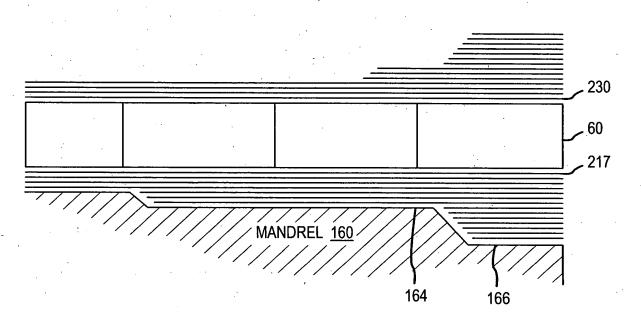


FIG.6

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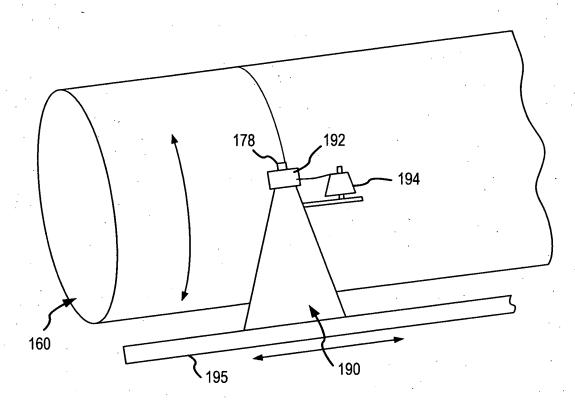


FIG.7

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DETERMINE SPATIAL ENVELOPE FOR ONE OR MORE SECTIONS OF THE COMPOSITE SANDWICH STRUCTURE. 300 CALCULATE STRUCTURAL REQUIREMENTS FOR EACH SECTION OF THE COMPOSITE SANDWICH STRUCTURE. 3<u>10</u> BASED ON THE STRUCTURAL REQUIREMENTS, DETERMINE STIFFNESS, BEARING, COMPRESSIVE STRENGTHS AND OTHER DESIRED PROPERTIES FOR EACH SECTION OF THE COMPOSITE SANDWICH STRUCTURE. 320 SELECT APPROPRIATE MATERIALS TO FORM THE COMPOSITE SANDWICH STRUCTURE BASED ON THE STRUCTURAL REQUIREMENTS. 330 DETERMINE RELATIVE PROPORTIONS OF THE FIRST AND SECOND FACE SHEETS AND CORE FOR EACH SECTION BASED ON THE SPATIAL ENVELOPE, STRUCTURAL REQUIREMENTS AND CHOSEN MATERIALS. 340 PRODUCE A DESIGN LAYOUT FOR THE COMPOSITE SANDWICH STRUCTURE BASED ON THE CHOSEN MATERIALS AND RELATIVE PROPORTIONS OF THOSE MATERIALS AT EACH SECTION.

FIG.8

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PREPARE MANDREL FOR COMPOSITE STRUCTURE LAY-UP. 400 APPLY FIBER REINFORCED MATERIAL PLIES 1-N TO THE OUTSIDE SURFACE OF THE MANDREL TO FORM THE INSIDE FACE SHEET. 410 APPLY AUGMENTATION LAYER 1-X TO PORTIONS OF THE OUTSIDE SURFACE OF PLIES 1-N TO REINFORCE DESIRED SECTIONS OF THE INSIDE FACE SHEET. 420 COVER THE OUTSIDE SURFACE OF THE INSIDE FACE SHEET WITH AN ADHESIVE. 430 APPLY THE CORE TO THE OUTSIDE SURFACE OF THE INSIDE FACE SHEET. 440 APPLY AUGMENTATION PLIES 1-X TO PORTIONS OF THE OUTSIDE SURFACE OF THE CORE TO REINFORCE DESIRED SECTIONS OF THE OUTSIDE FACE SHEET. 450 APPLY FIBER REINFORCED MATERIAL PLIES 1-N TO THE OUTSIDE SURFACE OF THE CORE AND AUGMENTATION LAYERS 1-X TO FORM THE OUTSIDE FACE SHEET. CONSOLIDATE THE COMPOSITE STRUCTURE. 470 CURE THE COMPOSITE STRUCTURE. 480 REMOVE THE MANDREL.

FIG.9